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BEAVER RIVER DISTRIBUTION SYSTEM REPORT ON INSPECTION OF MEASURING DEVICES AT MINERSVILLE, THREE CREEKS, AND KENT'S LAKE RESERVOIRS INSPECTION DATE JUNE 30, 2004

MINERSVILLE RESERVOIR – OBSERVATIONS

Above Reservoir

- The USGS gauging station above the reservoir has been removed by the USGS.

Reservoir Content

- There is a concrete staff gauge on face of dam – marked in actual elevation intervals of one foot with the intermediate six inches. It is in good condition.
- The elevation-storage chart used by the company shows storage capacity in 0.10-foot increments. It appears to have been created from the elevation-area-capacity curves on the plans for the dam construction.

Reservoir Outlet

- There is an 8-ft. Parshall flume with a staff gauge.
- A digital recorder was installed on the flume this year.

MINERSVILLE RESERVOIR – COMMENTS

- The measuring device and recorder for the reservoir outflow are well done and the water users are to be commended for their efforts.
- The outflow data collected from the reservoir is to be reported to the Beaver River water commissioner for inclusion in the annual report.

THREE CREEKS RESERVOIR – OBSERVATIONS

North Fork Inflow

- There is a 3-ft. metal Parshall flume that is out of level. It tips from back to front 2.5 inches in 4 feet and is tipped 1 inch from side to side.
- A reading of the staff gauge would indicate less flow than is actually flowing through it.

East Fork or Box Canyon Inflow

- There is a 5-ft. metal Parshall flume that is out of level. It is level from side to side, but it is tipped from back to front .25 inch in 4 feet.
- The flume has good inlet conditions though it could be cleaned out a little.

South Fork of Three Creeks

- There is a 2-ft. metal Parshall flume that is full of rocks. No level measurements were taken.

- Although there are minimal contributions to the reservoir from this channel, the owner company may want to correct the flume's deficiencies and maintain a flow record.

Reservoir Content

- The water elevation staff gauge for the reservoir consists of 10-ft.-tall posts set in concrete in the face of the dam so that the top of one is level with the bottom of the next one up the slope.
- At one time the posts were marked in one-foot intervals (and perhaps smaller increments) but the marks have worn off.
- The 40-50 foot interval post has been torn out and is lying on the face of the dam.
- The reservoir company relies on an elevation-capacity chart that appears to correspond fairly closely with the elevation- capacity chart from the dam construction plans. It gives storage capacity at one-foot elevation intervals.

Reservoir Outlet

- There is a 4-ft. metal Parshall flume that is slightly out of level. It is tipped 3/16 inch from side to side and from back to front it is tipped 1 inch in 4 feet.
- The inlet and the outlet conditions appear to be adequate for proper operation of the flume.

THREE CREEKS RESERVOIR – NECESSARY MODIFICATIONS

- The 40-50 foot interval post must be re-installed or replaced.
- All the posts must be marked and numbered at one-foot intervals with the intermediate six inches also marked.
- The reservoir elevation-capacity chart should be revised and re-formatted to show reservoir storage at 0.10-foot reservoir level increments.
- A new measurement curve needs to be developed for the Parshall flume below the reservoir outlet so that readings from the staff gauge will provide a more accurate measurement of the flow.

KENT'S LAKE – OBSERVATIONS

Above Reservoir – South Fork

- There are no measuring devices above, below or at the diversion.
- The water rights require that 10 cfs be left in South Fork for the UP&L power plant. The commissioner estimates the flow that is left in the creek and works out the flows with UP&L.

Reservoir Content – Upper Kent's Lake

- There is no staff gauge or other means of determining the amount of storage in the reservoir.
- The total capacity of the reservoir is 200 acre feet.

Reservoir Content – Middle Kents Lake

- The outlet pipe is set so the reservoir cannot be drained below the conservation pool (approx. 350 af).
- There is a marker (a PVC pipe filled with concrete that sticks up about 6") set in the reservoir basin (just upstream from the right abutment) that indicates the top of Beaver City's 200 acre feet storage in the reservoir.
- The reservoir spillway is notched to the elevation of the top of active storage. At the notch, the reservoir has about 630 feet of active storage (200 for city and 430 for Kent's Lake).

Reservoir Outlet

- The outflow from Kent's Lake is measured in 3 ft metal Parshall flume located just below Tushar Lake. Tushar Lake is a stabilized lake that has no restrictions on its outflow.
- The flume is out of level: tipped 1 ½ inches from side to side and tipped back to front ¼ inch.
- The flume is set in a bend in the creek; inflow is not uniform across the width of the flume.

KENT'S LAKE – NECESSARY MODIFICATIONS

- **A measuring device must be installed on South Fork to measure the flow that bypasses the diversion to the Kent's Lake Reservoirs. A potential site was identified just below the roadway crossing downstream of the diversion.**
- **The measuring device below Tushar Lake needs to be re-set so that it is level and located in a straight stretch of the stream so the inflow to the flume is more uniform across its width.**
- **A staff gauge must be installed on upper Kent's Lake Reservoir.**
- **A staff gauge must be installed on middle Kent's Lake Reservoir.**
- **A reservoir elevation-capacity chart must be created for both reservoirs to show reservoir storage at 0.10-foot reservoir level increments.**